MEASURING EARNINGS ASSIMILATION:

A DISTRIBUTIONAL APPROACH

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Abstract

This study contributes to the immigration literature by introducing a distributional measure to characterize earnings assimilation of immigrants. This new measure is considered to be advantageous over the conventional mean-based measures as it is able to show more details with respect to how well immigrants do economically relative to the natives across the earnings distribution. Analyzing data from CPS March Supplements with this measure we reevaluate the trends of earnings assimilation of immigrants in United States from 1994 to 2008. Findings are compared with the results obtained with the mean-based approach.

Background & Methods

Large scale immigration since the 1960s has become the determinant force in shaping the demographic profile of United States. In 2004, there are about 34 million foreign-born immigrants (Table 2.1, Census Bureau[1]) and they consist of 12% of the labor force in United States. Differing from the earlier European immigration, the new immigration is featured with newcomers from Asia, Latin America and other developing countries. The emergence of the new immigrants has sparked a large body of literature which examines to what extent the new immigrants have been integrated into the labor market of United States (Borjas 2007).

A review of the literature on economic assimilation of immigrants shows that most of the studies in this area are built on a mean-based measure of assimilation. However, comparison of the mean is informative only when the earnings structures of the two groups remain unchanged during the period of observation, and we know this is not the case for assimilation research. It is well known that income inequality in United States has risen for more than 30 years. Also it is not very likely that earnings inequality of the immigrants and that of the natives would grow in a similar pattern. Focusing exclusively on the means would lead us to draw the conclusion of "assimilation" (perhaps inappropriately) when the mean wage of the immigrant population remains constant with a decline in the average wage of the native-born as well as to ignore the changes in earnings structures of the immigrants and natives when the relative difference in average earnings remains unchanged. An elaborate discussion on these flaws will be provided in the following.

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[1] http://www.census.gov/population/socdemo/foreign/ppl-176/tab02-1.pdf .

Previous studies very often measure earnings assimilation descriptively by comparing the average wage of immigrants ($\overline{W}_I$) and that of the native ($\overline{W}_N$). The extent of assimilation is reflected either through the wage ratio ($\dfrac{\overline{W}_I}{\overline{W}_N}$) or the wage gap ($\dfrac{\overline{W}_I - \overline{W}_N}{\overline{W}_N}$). When the wage ratio equals to one, or the wage gap is zero, it is believed that immigrants have achieved economic parity with the native and therefore they are well assimilated. However, the average earnings only represents a single point at the earnings distribution, thus focusing only on the mean may fail to capture the earnings differences between the two groups at the rest of their earnings distributions, especially when the groups under comparisons are characterized with different earnings distributions.

In Figure 1 we give an example to show why the mean-comparison is insufficient to summarize the extent of assimilation, statically. Assume the bell-shape solid curve gives the earnings distribution of group A and the bi-modal curve represents the earnings distribution of group B. Both of the two groups have exact the same average earnings, however, it is unlikely that we would conclude group B is well assimilated into A, given their distinct wage structures.
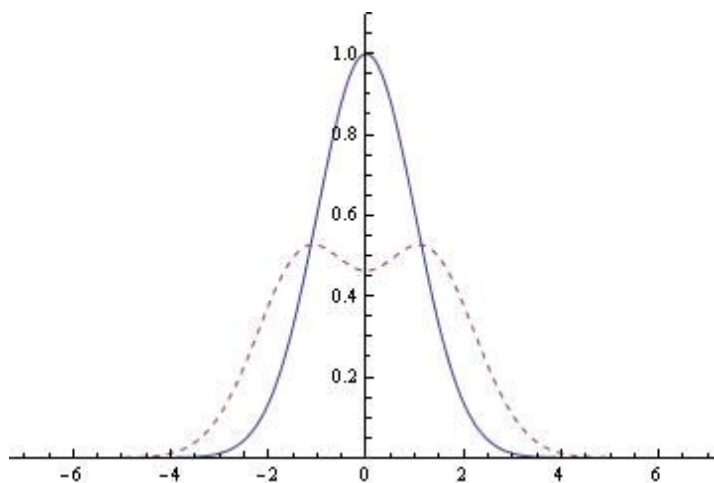

Figure 1 Earnings distributions at time t=0

Figure 1.

The mean-comparison approach may fail to capture the dynamics of assimilation as well. Imagining the two modes of the curve for group B are moving away from the origin (0, 0), that is, group B is getting more and more polarized, economically speaking. Again it is unlikely we would think that group B is still well assimilated into group A to the same extent, although the two groups do have identically average earnings. Therefore, the mean-comparison approach can only give us some sense about the difference between the two groups at a single point, which fails to inform us with what the rest of the immigrants do as compared to the native if their earnings are either below or above the mean.
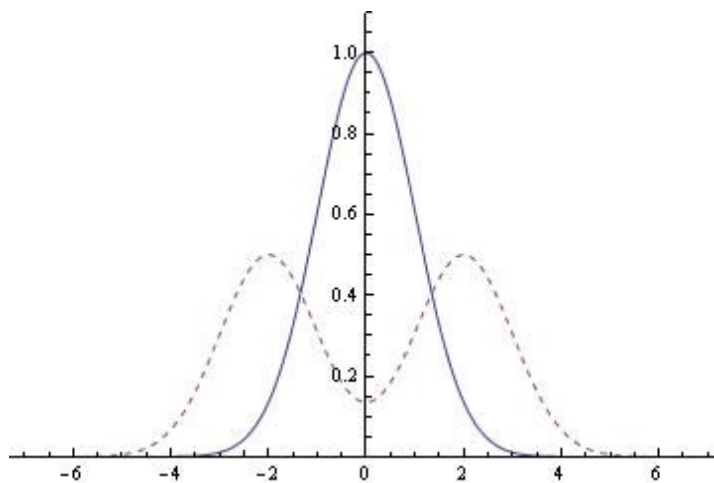

Figure 2 Earnings distributions at time t=1

Now we see that the difference in the average earnings between immigrants and the native only describes partially the extent of assimilation, as it is limited to a single point of the earnings distribution. We shall also note that it is also insufficient to capture assimilation by comparing the variances out of the same logic. While variance captures the extent of dispersion in earnings, it does not speak to the relative positions the members of a given group are taking in regards to another group. However, as the word "assimilation" is imprinted with a process of convergence between the immigrants and the native, we should expect that the perfectly-assimilated immigrants would have same earnings structure (characterized by the earnings distribution) as that of the native. Any measure would thus be insufficient to summarize assimilation as long as it does not reflect the relative positions the immigrants have achieved as compared to the native across the earnings distribution.

In this paper we propose to use a new measure for earnings assimilation and we shall refer to it as "assimilation index". It is also known as the Kullback-Leibler distance, which has been widely used in natural science and engineering. This measure has the following properties: a) it is non-negative, and scores zero if and only if the two distributions under comparison are identical; b) a larger value of the assimilation index "represents an increasingly dissimilar pair of distributions" (Edwards & Tuljapurkar 2005 PDR), thus informative to detect the extent of assimilation; c) it is invariant to all monotonic transformations of the original measurement scale.

In this study, we aim to answer the following questions by analyzing the earnings data from the Current Population Survey (1994-2008) March Supplements:

1. What are the magnitude and trend of earnings assimilation measured at distributional level for immigrants in United States during the period from 1994 to 2008?
2. To what extent do the observed trends of assimilation for immigrants vary by race and ethnicity, level of education attainment, and citizenship status, year of arrival?
3. What are the trends of earnings assimilation for the second and third generation of immigrants in United States during the same period?